

AMENDMENTS TO THE CLAIMS

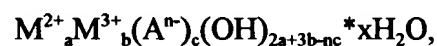
Kindly cancel claims 38-43 presently in the application.

Kindly amend claims 1, 2, 6, 21-25 and 30-32.

Kindly add new claims 44-49.

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Claim 1 (Currently amended) A catalyst comprising at least one metal loaded on a hydrotalcite-based carrier material which has the following formula in its its uncalcined form



wherein M^{2+} is at least one divalent metal; and M^{3+} is at least one trivalent metal;

A is an n-valent anion

n is 1 or 2,

c is 1 or 2,

and a and b are positive numbers, $a > b$;

the catalyst being prepared by:

- a) addition of at least one metal salt or complex to the carrier material, of which the carrier material is (at least partly) in, or transformed to, the hydrotalcite phase during the metal addition step;
- b) followed by washing, and
- c) calcination.

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Claim 2 (Currently amended) A (de)hydrogenation catalyst comprising at least one metal selected from the group VIII of the ~~periodical~~ periodic table of elements loaded on a hydrotalcite-based carrier material which has the following formula in its its uncalcined form



wherein M^{2+} is at least one divalent metal; and M^{3+} is at least one trivalent metal;

A is an n-valent anion

n is 1 or 2,

c is 1 or 2,

and a and b are positive numbers, $a > b$;

the catalyst being prepared by:

- a) addition of at least one metal salt or complex to the carrier material, of which the carrier material is (at least partly) in, or transformed to, the hydrotalcite phase during the metal addition step;

followed by

- b) washing, and
c) calcination.
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Claim 3 (Original) The catalyst of Claim 1 or 2, wherein M^{2+} is at least one divalent metal selected from the group consisting of Mg, Ni, Zn, Fe, Co, Cu, Cr, Mn, Ru, Rh, Pd, Os, Ir, Pt; and M^{3+} is at least one trivalent metal selected from the group consisting of Al, Ga, Ni, Co, Fe, Cr, Mn, V, Ti;

A is OH and/or CO_3 ; CH_3COO ; or other inorganic or organic acid residues

n is 1 or 2.

Claim 4 (Previously amended) The catalyst of claim 1 or 2, wherein M^{2+} is Mg.

Claim 5 (Previously amended) The catalyst of claim 1 or 2, wherein M^{3+} is Al.

Claim 6 (Currently amended) The catalyst of claim 1 or 2, wherein M^{3+} is further Ga.

Claim 7 (Previously amended) The catalyst of claim 1 or 2, wherein the at least one metal salt or complex has been added in an aqueous solution.

Claim 8 (Original) The catalyst of claim 7, wherein the at least one metal salt or complex has been added in a neutral aqueous solution.

Claim 9 (Original) The catalyst of claim 7, wherein the at least one metal salt or complex has been added in an acid aqueous solution.

Claim 10 (Original) The catalyst of the claim 9, wherein the pH of the acid aqueous solution is lower than 5, and preferably lower than 4.

Claim 11 (Previously amended) The catalyst of claim 9, wherein the at least one metal salt or complex has been added in an aqueous inorganic acid solution.

Claim 12 (Original) The catalyst of the claim 11, wherein the addition of the at least one metal salt or complex has been performed in an aqueous HCl solution.

Claim 13 (Previously amended) The catalyst of claim 9, wherein the acid aqueous solution is an aqueous solution of an organic acid.

Claim 14 (Original) The catalyst of the claim 13, wherein the organic acid is acetic acid.

Claim 15 (Previously amended) The catalyst of claim 1 or 2, wherein the at least one metal salt or complex has been added in an organic solution.

Claim 16 (Original) The catalyst of claim 15, wherein the addition of the at least one metal salt or complex has been performed in an ethanol solution.

Claim 17 (Previously amended) The catalyst of claim 1 or 2, wherein the at least one metal salt or complex has been added by wet impregnation.

Claim 18 (Previously amended) The catalyst of claim 1 or 2, wherein the contact time between the metal containing solution and the carrier material has been between 0.01 and 30 hours, preferably between 0.05-5 hours.

Claim 19 (Previously amended) The catalyst of claim 1 or 2, wherein the at least one metal salt or complex has been added by incipient impregnation.

Claim 20 (Previously amended) The catalyst of claim 1 or 2, wherein the hydrotalcite based carrier has been subject to preparation by mixing $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ and $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ dissolved in water with a basic aqueous solution containing OH and CO_3 anions.

Claim 21 (Currently amended) The catalyst of the claim 20, wherein the hydrotalcite based carrier has been subject to preparation as defined in the claim ~~1-20~~ 20 and drying.

Claim 22 (Currently amended) The catalyst of the claim 21, wherein the hydrotalcite based carrier has been subject to preparation and drying as defined in the claim ~~24~~ 21 and calcination.

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Claim 23 (Currently amended) The catalyst of the ~~claims~~ claim 22, wherein the hydrotalcite based carrier has been subject to preparation, drying and calcination as defined in the ~~claim 25~~ 22 followed by suspension.

Claim 24 (Currently amended) The catalyst of claim 1 or 2, wherein the hydrotalcite based carrier has been subject to wet impregnation ~~as defined in the claim 17~~ with the at least one metal salt or complex, and anion exchange.

Claim 25 (Currently amended) The catalyst of claim 1 or 2, wherein the hydrotalcite based carrier has been subject to a combination of any of the treatments of ~~the claims 20-24~~ (1) preparation by mixing $Mg(NO_3)_2 \cdot 6H_2O$ and $Al(NO_3)_3 \cdot 9H_2O$ dissolved in water with a basic aqueous solution containing OH and CO_3 anions, (2) said preparation and drying, (3) said preparation and drying and calcination, (4) said preparation, drying and calcination followed by suspension, and (5) wet impregnation with the at least one metal salt or complex and anion exchange.

Claim 26 (Previously amended) The catalyst of claim 1 or 2, wherein the hydrotalcite based carrier has been calcined at a temperature of 700 to 1200°C, preferably 700-800°C.

Claim 27 (Previously amended) The catalyst of claim 1 or 2, wherein the final catalyst calcination takes place at a temperature of 400 to 1200°C, preferably 560-800°C.

Claim 28 (Previously amended) The catalyst of claim 1 or 2, wherein a binder is admixed.

Claim 29 (Previously amended) The catalyst of claim 2, wherein the hydrotalcite based carrier has been impregnated by at least one metal selected from the group VIII of the periodical table of the elements.

Claim 30 (Currently amended) The catalyst of claim 2, wherein the hydrotalcite based carrier has been impregnated by at least one metal selected from the group IVA of the ~~periodical~~ periodic table of the elements.

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Claim 31 (Currently amended) The catalyst of the claim 30, wherein the hydrotalcite based carrier has been impregnated by at least one metal selected from the group VIII, at least one metal selected from the group IVA, and optionally at least one metal selected from the group IA of the ~~periodical~~ periodic table of the elements.

Claim 32 (Currently amended) The catalyst of the claim 29, wherein the hydrotalcite based carrier has been impregnated by at least one salt or complex of Pt as the group VIII of the ~~periodical~~ periodic table of the elements metal.

Claim 33 (Previously amended) The catalyst of claim 30 or 31, wherein the hydrotalcite based carrier has been impregnated by at least one salt complex of Sn from the group IVA of the periodical table of the elements.

Claim 34 (Previously amended) The catalyst of claim 32, wherein the hydrotalcite based carrier has been impregnated by at least one salt complex of Pt as the group VIII and by at least one salt or complex of Sn as the group IVA of the periodical table of the elements metal.

Claim 35 (Original) The catalyst of the claim 34, wherein the hydrotalcite based carrier has been impregnated by a salt or complex of Pt and by a salt or complex of Sn.

Claim 36 (Previously amended) The catalyst of claim 29, 31 or 32, wherein the salt of Pt is $H_2PtCl_6 \cdot 6H_2O$.

Claim 37 (Previously amended) The catalyst of claim 30, 31 or 32, wherein the salt of Sn is $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$.

Claims 38-43 (Cancelled)

Claim 44 (New) In a process comprising subjecting a material to a catalytic reaction in the presence of a catalyst, the improvement wherein the catalyst is a catalyst of claim 1 or 2.

Claim 45 (New) In a process comprising subjecting a material to a dehydrogenation reaction in the presence of a catalyst, the improvement wherein the catalyst is a catalyst of claim 2.

Claim 46 (New) The process of claim 45, wherein the material is an alkane.

Claim 47 (New) The process of claim 47, wherein the alkane is a C_{2-4} alkane.

Claim 48 (New) The process of claim 48, wherein the alkane is propane.

Claim 49 (New) In a process comprising subjecting an unsaturated hydrocarbon to hydrogenation in the presence of a catalyst, the improvement wherein the catalyst is a catalyst of claim 2.
